

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet: PALEOEKOLOGIJA IN TAFONOMIJA
Course title: PALAEOECOLOGY AND TAPHONOMY

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Okoljske in regionalne študije, doktorski študij 3. stopnje	Paleobiologija in sedimentarna geologija		
Environmental and Regional Studies, doctoral study 3 rd level	Palaeobiology and Sedimentary geology		

Vrsta predmeta / Course type

Izbirni/Elective

Univerzitetna koda predmeta / University course code:

DIP04

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
30	10	20			120	6

Nosilec predmeta / Lecturer:

Izr. prof. dr. Aleksander Horvat

Jeziki /
Languages:

Predavanja / Lectures: slovenščina, angleščina / Slovene, English
Vaje / Tutorial: slovenščina, angleščina / Slovene, English

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:

Vpis v 1. letnik.

Prerequisite:

Inscription to the 1st academic year.

Vsebina:

- Evolucija biosfere: vodni in terestrični ekosistemi, način življenja in trofični režimi skozi geološki čas, globalne spremembe atmosfere, hidrosfere in litosfere
- Metode v paleoekologiji in tafonomiji
- Fosili kot pokazatelji okolja
- Okoljska kontrola biotske distribucije
- Evolucijska paleoekologija posameznih skupin organizmov in ekosistemov
- Tafonomija: procesi fosilizacije in diagenaza skeletnih mineralov, tafonomija in fanerozojska biodiverziteta; ohranitveni potencial v

Content (Syllabus outline):

- Evolution of biosphere: aquatic and terrestrial ecosystems, mode of life and trophical regime in deep time; global changes in atmosphere, hydrosphere and lithosphere
- Methods in palaeoecology and taphonomy
- Fossils as environmental indicators
- Environmental control on biotic distributions
- Evolutionary palaeoecology of individual organism groups and ecosystems
- Taphonomy: fossilization processes and diagenesis of skeleton minerals; preservation in different ecological settings,

različnih okoljih; koncept tafofaciesov; lagerstätten

- Ichnologija
- Adaptivna in funkcionalna morfologija
- Populacije in združbe
- Paleobiogeografija, paleoklimatologija in evolucija
- Ekološka zgradba glavnih dogodkov v zgodovini življenja

taphonomy and Phanerozoic biodiversity, concept of taphofacies, lagerstätten

- Ichnology
- Populations, communities and assemblages
- Adaptive and functional morphology
- Palaeobiogeography, palaeoclimatology and evolution
- Ecological architecture of major events in the Phanerozoic life history

Temeljni literatura in viri / Readings:

Izbrana poglavja in članki iz/Selected chapters and papers from:

- Allison, P. A. & Bottjer, D. J. 2011: *Taphonomy: Process and Bias Through time*. 2nd edition, 1-612, Springer.
- Allmon, W. D. & Bottjer, D. J. 2001: *Evolutionary Paleoecology*. Columbia Uni. Press, 1-357.
- Brenchley, P.J. & Harper, D.A.T., 1998: *Palaeoecology, Ecosystems, Environments and Evolution*. Chapman & Hall, 1-402.
- Briggs, D. E. G. & Crowther, P. R. (Eds.) 1990: *Palaeobiology: A synthesis*. Blackwell Publishing, 1-555.
- Briggs, D. E. G. & Crowther, P. R. (Eds.) 2003: *Palaeobiology II*. Blackwell Publishing, 1-583.
- Hammer, Ø. & Harper, D. 2006: *Paleontological data analysis*. Blackwell Sci. Publ., 1-351.
- Jackson, J. B. C., & Erwin, D. H. 2006: What can we learn about ecology and evolution from the fossil record? *Trends in Ecology & Evolution* 21/6: 322–328.
- Lieberman, B.S., 2000: *Paleobiogeography: Using fossils to study global change, plate tectonics and evolution*. Kluwer Acad. Press., 1-208.
- Palaeogeography, Paleoclimatology, Palaeoecology (Elsevier Publ.)

Cilji in kompetence:

Slušatelj bo sposoben prepoznati in razložiti osnovne paleoekološke pojme. Usposobljen bo za razumevanje in raziskovanje pomembnih biotskih in nebiotskih faktorjev, ki vplivajo na današnja in nekdanja okolja. Določal bo fosile, interpretiral njihov način življenja in analiziral njihovo funkcionalno morfologijo. Slušatelj bo usposobljen za analizo fosilne združbe in bo znal rekonstruirati njen geološki in paleoekološki kontekst. Študent bo usposobljen prepoznati paleoekološke in okoljske spremembe v kamninskem zapisu ter razložiti vzroke zanje. Sposoben bo pojasniti pomen paleoekologije in paleontologije v drugih znanstvenih disciplinah, vključno z geologijo, biologijo in globalnimi spremembami. Študent bo sposoben poiskati relevantno paleoekološko literaturo

Objectives and competences:

In this course, students will be able to identify and explain major concepts in palaeoecology and investigate essential principles regarding the biotic and abiotic factors affecting modern and past environments. Students will be required to identify the fossil, interpret the mode of life and analyze its functional morphology. Students should be able to analyze a fossil assemblage and reconstruct its geological and palaeoenvironmental contexts. Students should be able to recognize and evaluate palaeoecological and environmental changes in rock record and explain the causes for that. Students should be able to explain the importance of palaeoecology and palaeontology to other realms of knowledge including geology, biology, and global change. Students should identify major publications in the area of

ter pomembne publikacije, povezane s posameznimi taksonomskimi skupinami.

palaeoecological concepts as well as works dealing with specific taxonomic groups.

Predvideni študijski rezultati

Znanje in razumevanje:

- Samostojno analizira in interpretira fosilne združbe v paleokološkem smislu.
- Usposobljen je za razpravljanje o pomembnih paleoekoloških vprašanjih in konceptih.
- Samostojno vključevati paleoekološke podatke in vprašanja v svoje raziskave.
- Samostojno pridobi ustrezne materiale, uporabi ustrezne analitske in numerične metode ter strokovno literaturo in pripravi pisno ali ustno predstavitev na temo paleoekologije.

Intended learning outcomes:

Knowledge and understanding:

- Analyze and interpret fossil assemblages for form and function and palaeoenvironmental setting.
- Discuss the concepts and important questions in palaeoecology.
- Incorporate palaeoecological questions and data into own research.
- Choose, independently investigate, and prepare a written and oral report on a topic in palaeoecology.

Metode poučevanja in učenja:

- Predavanja
- e-učenje
- Seminarji
- Praktične vaje

Learning and teaching methods:

- Lectures
- e-learning
- Seminars
- Practical training

Načini ocenjevanja:

Delež (v %) /
Weight (in %)

Assessment:

Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment:
Način (pisni izpit, ustno izpraševanje, naloge, projekt)		Type (examination, oral, coursework, project):
● Pisni ali ustni izpit	50	● Written or oral exam
● Seminarska naloga/članek	50	● Written essay/paper

Reference nosilca / Lecturer's references:

1. Bohinc, T., **Horvat, A.**, Andrić, G., Pražić Golić, M., Kljajić, P., Trdan, S. 2020: Natural versus synthetic zeolites for controlling the maize weevil (*Sitophilus zeamais*) - like Messi versus Ronaldo?. *Journal of Stored Products Research*, 88, art. no. 101639, str. 1-9.
2. Goričan, Š., Žibret, L., Košir, A., Kukoč, D., **Horvat, A.** 2018: Stratigraphic correlation and structural position of Lower Cretaceous flysch-type deposits in the eastern Southern Alps (NW Slovenia). *International journal of earth sciences*, 107/8, 2933-2953.
3. Moro, A., **Horvat, A.**, Tomić, V., Sremac, J. Bermanec, V. 2018: Facies development and paleoecology of rudists and corals: : an example of Campanian transgressive sediments from northern Croatia, northeastern Slovenia, and northwestern Bosnia. *Facies*, 62/19, 18-25. DOI: [10.1007/s10347-016-0471-y](https://doi.org/10.1007/s10347-016-0471-y).
4. Moro, A., Velić, I., Mikuž, V., **Horvat, A.** 2018: Microfacies characteristics of carbonate cobble from Campanian of Slovenj Gradec (Slovenia) : implications for determining the *Fleuryana adriatica* De Castro, Drobne and Gušić paleoniche and extending the biostratigraphic range in the Tethyan realm. *Mining-Geology-Petroleum Engineering Bull.*, 42, 1-13. DOI: [10.17794/rgn.2018.4.1](https://doi.org/10.17794/rgn.2018.4.1).
5. **Horvat, A.** 2016: *Distephanopsis concavus* Horvat : a revised silicoflagellate species from the Middle Miocene of the Central Paratethys. *Geologija*, 59/2, 233-241. DOI: [10.5474/geologija.2016.014](https://doi.org/10.5474/geologija.2016.014).